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| 10/566,526   | 09/22/2006  | Alistair I. Watson          | 099970-0065         | 7121             |
| 21125 7590 04/29/2009<br>NUTTER MCLENNEN & FISH LLP<br>WORLD TRADE CENTER WEST<br>155 SEAPORT BOULEVARD<br>BOSTON, MA 02210-2604 |             |                             |                     |                  |
| EXAMINER<br>DRENNAN, BARRY T   |             |                             |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

doctet@nutter.com

### Office Action Summary

**Application No.**

10/566,526

**Applicant(s)**

WATSON ET AL.

**Examiner**

Barry Drennan

**Art Unit**

2624

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2006 and 03 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date \_\_\_\_\_
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Priority***

1. This application claims benefit of international application PCT/GB2004/03336, filed under the Patent Cooperation Treaty with effective filing date 30 July 2004. This application further claims foreign priority benefit of GB 0318129.4, filed in the United Kingdom on 1 August 2003.

### ***Preliminary Amendment***

2. The preliminary amendment filed 3 March 2006, cancelling claims 1-4 and adding new claims 5-22, has been entered. Claims 5-22 are therefore pending in the application.

### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Determination of alpha value based on nearby foreground and background colors for pasting and blending a source image into a target image".

***Claim Objections***

4. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. The claim recites "a system... arranged to undertake the method of claim 5". One could conceivably make such a system, thus infringing claim 19, without using the system, thus avoiding infringement of claim 5. See MPEP 608.01(n)-III.

5. Claim 22 is objected to because of the following informality: A semicolon appearing in line 6 of the claim seems to be incorrect (a comma should appear there). Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Particularly, there is no system described

anywhere in the specification, as originally filed, for implementing the method recited in the claim.

8. Claim 19 rejected under 35 U.S.C. 112, first paragraph, because the claim is unduly broad. The claim's scope encompasses every possible system for implementing the recited method. See MPEP 2164.08(a).

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 5, 7, 19, 20, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 5 recites the limitation "representing the contribution to the visual characteristics of the first and second regions" on line 7 of the claim, but it is not clear from where the contribution to those visual characteristics arises, rendering the claim indefinite. For purposes of examination against the prior art, Examiner interprets the claim such that "the contribution" above means the contribution of the "candidate pixel".

Further, claim 5 recites the limitation "belonging to the first and second sets of pixels" on line 11 of the claim. It is unclear to what this limitation refers; for example, it could refer to the "pixels" of line 10, the "visual characteristics" of lines 9-10, the "neighborhood" of line 10, the "candidate pixel" of line 10, or the "candidate pixel" and "pixels" of lines 9 and 10 jointly. This renders the claim indefinite. For purposes of

examination against the prior art, Examiner interprets the claim such that "belonging to the first and second sets of pixels" refers to the "pixels" of line 10.

12. Claim 7 recites the limitation "the distances", but it is not clear that multiple distances are present; parent claim 6 only recites "a certain distance". The claim therefore lacks antecedent basis for this limitation, rendering the claim indefinite. For purposes of examination against the prior art, Examiner interprets the limitation to mean "the distance" instead.

13. Claim 19 claims a system but recites no corresponding structure. The essence of a claim to an apparatus is its structure. Lacking any recited structure, the claim is therefore indefinite.

14. Claim 20 recites the limitation "the parameters" at line 7 of the claim. There is insufficient antecedent basis for this limitation, rendering the claim indefinite. For purposes of examination against the prior art, Examiner interprets the limitation to read "parameters" rather than "the parameters".

15. Claim 22 recites the limitation "taking into account a great number of pixels surrounding the respective edge pixel". Neither the claim nor the specification provides any quantifiable explanation for how much "a great number" actually is. This renders the claim indefinite. For purposes of examination against the prior art, Examiner

interprets the limitation "a great number of pixels" to mean "more than 24 pixels", which appears to be commensurate with the specification (p. 6 line 32).

***Claim Rejections - 35 USC § 101***

16. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

17. Claims 5-18 and 20-22 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. The Federal Circuit<sup>1</sup>, relying upon Supreme Court precedent<sup>2</sup>, has indicated that a statutory "process" under 35 U.S.C. 101 must (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a different state or thing. This is referred to as the "machine or transformation test", whereby the recitation of a particular machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility (See *Benson*, 409 U.S. at 71-72), and the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (See *Flook*, 437 U.S. at 590"). While the instant claims recite a series of steps or acts to be performed, the claims neither transform an article nor positively tie to a particular machine that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

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<sup>1</sup> *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

<sup>2</sup> *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

That is, the claims neither recite nor require a particular machine to perform the recited steps, so the claims are not tied to a particular machine. Furthermore, the claims recite a modification of data; however, the unmodified data is not claimed as being representative of a physical object or substance, and there is no claimed depiction of the modified data as an external representation of the physical object or substance, where the depiction must impose meaningful limits on the claim's scope.

18. Claim 19 recites a system, but no physical elements are recited, and the claim's scope encompasses embodiments that are implemented purely as software. Software is considered functional descriptive material, which, when claimed *per se*, is nonstatutory subject matter (*In re Warmerdam*, 3 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994)).

### ***Claim Rejections - 35 USC § 102***

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.



20. Claims 5-10 and 14-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Blake et al., U.S. Patent 6,741,755 B1 (filed as application 09/747,603 on 22 December 2000, hereinafter **Blake**).

21. With respect to claim 5, Blake discloses a method for processing a digital image (**col. 4 lines 28-32**) comprising the steps of:

identifying first and second sets of pixels corresponding respectively to first and second regions of the image (**foreground F and background B regions, and individual pixels therein, #84 and #86 Fig. 2**);

identifying a third set of pixels corresponding to a third region of the image at the boundary between the first and second regions (**contour pixels C, Fig. 2 #80 and #72a-e**);

determining a contribution factor for a candidate pixel in the third set of pixels representing the contribution to the visual characteristics of the first and second regions (**Eq. 2, col. 8 line 5, and col. 7 line 36**),

in which the contribution factor is determined using the visual characteristics of the candidate pixel and the visual characteristics of pixels in the neighborhood of the candidate pixel belonging to the first and second sets of pixels (**Eq. 2, col. 8 line 5, and col. 7 lines 36-40**).

22. With respect to claim 6, Blake discloses the method of claim 5 in which the pixels in the neighborhood of the candidate pixel comprise those pixels that are within a certain distance from the candidate pixel (**Fig. 4, where the contour line C has been**

**dilated to the region W, and for any pixel I within the region W, the certain distance to first set pixels F and second set pixels B does not exceed the dilated width of W, or 3).**

23. With respect to claim 7, Blake discloses the method of claim 6 in which the distances may be varied **(the amount of dilation of the contour line C is variable at the whim of the user, thus influencing the certain distance described above; see col. 6 line 67 through col. 7 line 5).**

24. With respect to claim 8, Blake discloses the method of claim 5 in which the visual characteristics of each pixel are representable by a set of values **(color values, e.g., col. 7 line 36-50 and Eq. 2, col. 8 line 5), and**

in which the contribution factor is determined from first, second and third sets of values **(Eq. 2, col. 8 line 5),**

the first set of values being derived from the sets of values representing the visual characteristics of pixels in the neighborhood of the candidate pixel belonging to the first set of pixels **(foreground pixel values F in Eq. 2),**

the second set of values being derived from the sets of values representing the visual characteristics of pixels in the neighborhood of the candidate pixel belonging to the second set of pixels **(background pixel values B in Eq. 2),**

and the third set of values being the set of values representing the visual characteristics of the candidate pixel **(contour pixel value I in Eq. 2).**

25. With respect to claim 9, Blake discloses the method of claim 8 in which the first set of values is the average of the sets of values representing the visual characteristics of the pixels in the neighborhood of the candidate pixel belonging to the first set of pixels (**"For example, F values may be determined via... an average of several nearby foreground pixels", col. 7 lines 53-55**).

26. With respect to claim 10, Blake discloses the method of claim 8 in which the second set of values is the average of the sets of values representing the visual characteristics of the pixels in the neighborhood of the candidate pixel belonging to the second set of pixels (**"Values for B are similarly selected as values for F except that B values are selectd from the background side", col. 7 lines 59-61, and col. 7 lines 53-55 as for claim 9**).

27. With respect to claim 14, Blake discloses the method of claim 8 in which the contribution factor is given by the equation (Eq. 2, col 8 line 5)

$$\alpha = \frac{(\underline{c}-\underline{b}) \cdot (\underline{f}-\underline{b})}{\left|(\underline{f}-\underline{b})\right|^2}$$

28. With respect to claim 15, Blake discloses the method of claim 5 in which the contribution factor is an opacity factor (**"a mixture-based computation of opacity according to [Equation 2]", col. 8 lines 2-5**).

29. With respect to claim 16, Blake discloses the method of claim 5 in which the visual characteristics include color ("**foreground color... background color... and [alpha] is the alpha value which represents the mixing ratio of foreground and background colors**", col. 7 lines 36-40).

30. With respect to claim 17, Blake discloses the method of claim 5 in which the first region of the image is a foreground portion of the image and the second region of the image is a background portion of the image (**see rejection of claim 5 above**).

31. With respect to claim 18, Blake discloses the method of claim 5 comprising the further steps of:

modifying the visual characteristics of the third set of pixels according to the contribution factor ("**The value for I may be assigned as F**", col. 8 line 11, **for use in the equation at col. 8 lines 16-17, where the modified visual characteristics of the third set of pixels is alpha times F, as appearing in the equation at col. 8 lines 16-17**); and

overlaying the first and third sets of pixels onto a second digital image (**col. 8 lines 53-56**),

the visual characteristics of the overlaid pixels corresponding to the first set of pixels being the same as the visual characteristics of the first set of pixels (**Fig. 1, #30a-c, showing that the foreground image portion #20b is placed over the new**

**background #30c, and where the alpha values in the method described therein are only calculated for the contour edge pixels, meaning that the pixels within #30b are taken directly from #20b and not from #30c),**

the visual characteristics of the overlaid pixel corresponding to the third set of pixels being derived from the contribution factor, the visual characteristics of the pixels onto which the third set of pixels were overlaid and the visual characteristics of the third set of pixels (col. 4 lines 50-54 and the equation at col. 8 lines 16-17).

32. With respect to claim 19, Blake discloses a system for processing a digital image arranged to undertake the method of claim 5 (**Fig. 6; see also the rejection of claim 5 above**).

33. With respect to claim 20, Blake discloses a method of digital image processing in which an object is excised from a first digitized image and pasted on to a second digitized image, the method including the steps of:

identifying a set of pixels corresponding to the object, and within that set which pixels correspond to the edge(s) of the object and which to the interior (**Fig. 2, contour and foreground pixels C and F**),

for each pixel corresponding to the edge(s) of the object assigning a contribution factor dependent upon the parameters associated with its immediate neighbors including other edge pixels, pixels corresponding to the interior of the object and peripheral background pixels corresponding to the parts of the first digitized image

which lie outside the excised object but adjacent its edge(s) (**Eq. 2, as discussed previously**),

substituting for the parameters associated with each edge pixel of the set parameters based on the contribution factor and on the parameters associated with the peripheral background pixels of the second digitized image (**Equation at col. 8 lines 16-17 as discussed previously**), and

constructing a new digitized image file from the pixels of the second digitized image not located at positions corresponding to the pixels of the excised object, the pixels of the interior of the object, and the edge pixels with substituted parameters (**Fig. 1 #30a-c, Fig. 5 #162, and col. 4 lines 50-57**).

34. With respect to claim 21, Blake discloses a method according to claim 20 wherein the contribution factor is calculated by a method including locating in color space

a first point corresponding to the color of pixels adjacent or near the respective edge pixel and assigned to the set of interior pixels (**value of F, col. 7 lines 36-38**),

a second point corresponding to the color of pixels adjacent or near the respective edge pixel and being peripheral background pixels (**value of B, col. 7 lines 36-38**), and

calculating the contribution factor dependent upon the position along the line of the point on the line in color space connecting the first point and the second point

closest to the point in color space corresponding to the edge pixel for which the contribution factor is to be calculated (**performed by Eq. 2 at col. 8 line 5**).

***Claim Rejections - 35 USC § 103***

35. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

36. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blake as applied to claim 8 above, and further in view of Mao, K., U.S. Patent Application Publication 2003/0063797 A1 (published 3 April 2003, hereinafter **Mao**).

37. With respect to claim 11, Blake discloses the method of claim 8, but does not disclose determination of a set of classes of visual characteristics as a further step.

However, Mao discloses determining a set of classes of visual characteristics which occur only in the first region of the image in regions of the image adjacent to the third region of the image (paragraph 41, where a class includes associated pixels, the region, i.e., foreground or background, in which the associated pixels are located, and a blending parameter B; "closest foreground color" indicates the proximity in image x/y space, thus indicating that the associated pixels are in regions of the image adjacent to the third region of the image; a set of classes thus comprises all class members, i.e., one for each possible value of B).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Blake by instead using the method of Mao to calculate the blending parameter, representing the substitution of one technique with another to arrive at predictable results.

38. With respect to claim 12, the claim is substantially the same as claim 11, but instead applies to the second region rather than the first. Both Blake and Mao treat the foreground and background portions of the image in the same manner, and so the rationale for rejection of claim 11 applies to claim 12 as well.

39. With respect to claim 13 as dependent from claim 11, Mao further discloses that the selected class of visual characteristics minimizes the distance between the color value of a pixel in question and a color value which is a linear combination between the foreground and background color values, governed by the blending parameter (**Eq. 1, under paragraph 41**). (This is merely a description in words of what the equation recited in claim 13 does. By selecting the blending parameter, a class according to claim 11 is chosen, and that blending parameter causes the quantity recited in claim 13 to be minimized.)

40. With respect to claim 13 as dependent from claim 12, the claim is substantially the same as claim 13 as dependent from claim 11, but instead applies to the second region rather than the first. Both Blake and Mao treat the foreground and background



portions of the image in the same manner, and so the rationale for rejection of claim 11 applies to claim 12 as well.

41. With respect to claim 22, Blake discloses a method according to claim 21, but does not teach calculating the contribution factors for edge pixels wherein the surrounding eight pixels include both interior and background pixels.

However, Mao teaches calculating the contribution factor based first on interior and background pixels within the surrounding eight pixels, expanding if necessary to the surrounding 24 pixels or the surrounding 48 pixels (**Fig. 4; paragraphs 37-39**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Blake by instead using the method of Mao to calculate the blending parameter, representing the substitution of one technique with another to arrive at predictable results.

### ***Conclusion***

42. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schindler, K.W., U.S. Patent 5,630,037.

Henderson et al., U.S. Patent 5,937,104.

Doll, J., U.S. Patent 6,310,970 B1.

Zamir, H., U.S. Patent 6,300,955 B1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry Drennan whose telephone number is 571-270-7262. The examiner can normally be reached on Monday through Thursday, 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Barry Drennan/  
Examiner, Art Unit 2624

/Brian P. Werner/  
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